UPDATE
National Toxicology Program

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Headquartered at the National Institute of Environmental Health Sciences NIH-DHHS

What's Inside:

Christopher Portier, Ph.D. Appointed to World Innovation Foundation

Christopher Portier, Ph.D.

The World Innovation Foundation (WIF) has announced the appointment of NIEHS Associate Director Christopher Portier, Ph.D., to its prestigious group of members and fellows. According to the organization, "Membership in the World Innovation Foundation is now becoming considered in many parts of the world… [as] recognition of being a major global innovator of the highest order."

WIF describes itself as "the only fully 'independent' scientific, technological, engineering and applied economic 'think-tank' in the world today. The WIF has no direct financial ties to any governments or corporate entities. It is therefore a free-thinking group of the world's foremost creative minds." WIF honorary members and fellows collaborate in consultations for the benefit and enlightenment of peace-abiding governments and nations throughout the world. The foundation aims to foster peace on the planet by promoting health, economic development, and scientific progress for all.

With this appointment, Portier joins a distinguished international group of intellectuals who are leaders in their respective fields. The members include a number of Nobel laureates, heads of international organizations and inventors. WIF invites into its membership individuals who have profoundly influenced the development of research and made innovative applications in their fields. The foundation honored Portier for his contributions to environmental medicine and the development of cutting-edge toxicological risk assessment.

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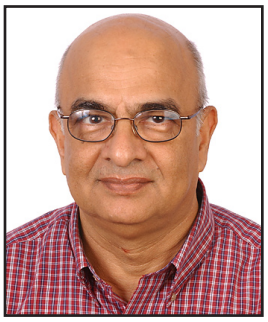
(Photos courtesy of Steve McCaw)

37 Years of Service



Rajendra (Raj) Chhabra, Ph.D., D.A.B.T

Dr. Rajendra (Raj) Chhabra recently received recognition as one of the longest serving NIEHS employees. He came to NIEHS in 1970 after completing his Ph.D. in pharmacology at the University of London, England. An intramural research investigator in the Laboratory of Pharmacology until 1977, Dr. Chhabra served as the NIEHS representative to the National Cancer Institute Bioassay Program and in 1978 was appointed as a senior toxicologist within the newly created NTP. Dr . Chhabra has made a number of significant contributions to the NTP and currently heads the General Toxicology Group where he is responsible for management of NTP toxicity and carcinogenicity studies.

NEXT

Upcoming Events

May 16-17, 2007
NTP Board of Scientific Counselors Technical Reports Review Subcommittee, NIEHS,
111 T.W. Alexander Drive
Research Triangle Park, NC

June 11, 2007
Town Meeting for NICEATM/ICCVAM Draft 5-Year Plan, NIH, Bethesda, MD

June 12, 2007
Scientific Advisory Committee on Alternative Toxicological Methods, Bethesda North Marriott and Conference Center,
5701 Marinelli Road, Bethesda, MD

June 22, 2007
NTP Board of Scientific Counselors, NIEHS
111 T.W. Alexander Drive
Research Triangle Park, NC

http://ntp.niehs.nih.gov/go/calendar

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Christopher Portier, Ph.D. Appointed to World Innovation Foundation

Portier has been with NIEHS since 1979, when he came to the Institute as a doctoral student. He is currently the director of the Office of Risk Assessment Research and the principal investigator with the Environmental Systems Biology Group. He also is serving temporarily as scientific advisor to the director, Public Health and the Environment, World Health Organization. From 2001 to 2005, Portier was associate director of the interagency National Toxicology Program (NTP), and he was the moving force behind the development of the NTP "Roadmap," which was released in 2005 as part of the NTP 25th Anniversary Celebration in Washington, D.C. ●

(Article by Eddy Ball, *NIEHS Environmental Factor*, January 2007)

2006 Following the NTP Vision and Roadmap: The NTP Workshops

In August 2003, the NTP defined its vision for the 21st century and undertook a yearlong process to refine that vision ("NTP Vision") and develop a roadmap for its implementation ("A National Toxicology Program for the 21st Century: A Roadmap for the Future" http://ntp.niehs.nih.gov/go/vision . The goal envisioned was to position the program strategically at the forefront in providing scientific data and the interpretation of those data for public health decision-making.

The last decade of the 20th century and the turn of the 21st century have produced dramatic technological advances in molecular biology and computer science. The NTP continues to evaluate its key activities and, in a focused and concerted effort, determine how best to incorporate these new scientific technologies into its research and testing strategies and broaden scientific knowledge of the linkage between mechanism and disease. The NTP Vision is to support the evolution of toxicology from a predominantly observational science at the level of disease-specific models to a predominantly predictive science focused upon a broad inclusion of target-specific, mechanism-based biological observations. Implementation of the NTP Roadmap has led to a series of public workshops, being convened to review aspects of the existing testing program. The following is an overview of the workshops presented to date.

Animal Models for the NTP Rodent Cancer Bioassay: *Strains and Stocks - Should We Switch?*

The first NTP workshop, *Animal Models for the NTP Rodent Cancer Bioassay: Strains & Stocks - Should We Switch?* was held in June of 2005. Its focus was an evaluation of strains currently used in the NTP rodent cancer bioassay to improve the ability of the bioassay to identify substances that may pose a carcinogenic hazard for humans. In particular, the goal was to seek scientific input as to whether the NTP should continue to use both the F344 rat and

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Following the NTP Vision and Roadmap: The NTP Workshops

B6C3F1 mouse models, use other strains or stocks, and/or use multiple strains. The program included plenary sessions as well as three breakout group meetings for in-depth discussion of rat models, mouse models, and the multiple strain approach. Opportunity was given to the public to comment on the appropriateness of the two rodent models currently being used and/or submit historical control data for rodent models that the NTP might consider at the workshop.

In brief, the workshop participants recommended NTP switch to another rat stock or F344 strain because problems with the current NTP strain F344/N are significant; however, they did not feel at this time that the NTP needed to change from using the mouse model B6C3F1/N in the cancer bioassay. Two of the three breakout groups suggested that NTP consider utilizing a multiple strain approach for cancer hazard evaluation. The breakout group reports and additional information on the workshop, including participants, presentations, public comments, and background materials, are posted on the NTP website: http://ntp.niehs.nih.gov select *Meetings and Workshops*. A report from the workshop has been published, which also outlines NTP's next steps in pursuing the workshop recommendations.

King-Herbert, A. and K. Thayer (2006). "NTP Workshop: Animal Models for the NTP Rodent Cancer Bioassay: Stocks and Strains – Should We Switch?" *Toxicol Pathol* 34(6):802-5 http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=17162538

Hormonally Induced Reproductive Tumors – Relevance of Rodent Bioassays

In May 2006, the NTP held the workshop, *Hormonally Induced Reproductive Tumors - Relevance of Rodent Bioassays.* Its overall objective was to determine the adequacy and relevance to human disease outcome of rodent models for four types of hormonally induced reproductive tumors (ovary, mammary gland, prostate, and testis). The format included both plenary presentations and tumor-site-specific breakout groups.

None of the breakout groups felt the current NTP models are completely sufficient for predicting human disease outcomes and, in general, adequate models do not exist for some tumor types. All breakout groups suggested that the NTP consider modifying its testing protocols (i.e., age at exposure, length of study, additional endpoints, etc.) and/or using alternative models (i.e., transgenics, *in vitro*, etc,) to improve sensitivity. Breakout group reports and additional information on the workshop, including participants, presentations, public comments and background materials, are posted on the NTP website: http://ntp.niehs.nih.gov select *Meetings and Workshops*. A report from the workshop has been submitted for publication.

Biomarkers for Toxicology Studies

The term *biomarker* is often used to refer to indicators of exposure and response in biological systems. Biomarker measurements can potentially be used as indicators of disease etiology or biological function; however, their utility is a function of how well the biomarker is understood. In addition, biomarkers measured in animal models should be applicable to humans.

NTP convened a workshop in September 2006 to help identify biomarkers that could be used in toxicology studies with rodents to predict disease outcome and detect early events in disease processes. Invited experts reviewed biomarkers for disease/injury related to the heart, lung, and/or changes in lipid/carbohydrate metabolism and made recommendations for those that could be incorporated into NTP studies on a routine or selective basis. Although numerous biomarkers were discussed, only a few were considered amenable for routine use. After careful consideration of the workshop's recommendations, the NTP will begin including serum cholesterol and triglycerides as routine measures in its subchronic studies. Several other biomarkers (troponin, fructosamine, and possible B-type natriuretic

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Board of Scientific Counselors Technical Reports Review Subcommittee

The NTP Board of Scientific Counselors Technical Reports Review Subcommittee is scheduled to meet on May 16-17, 2007, at the NIEHS, 111 T.W. Alexander Drive, Research Triangle Park, NC to peer review the findings and conclusions from 7 draft NTP Technical Reports performed in conventional rats and mice. The multigenerational study with ethinyl estradiol was performed using Sprague Dawley rats.

The draft technical reports tentatively scheduled for review are:

TR 550 Cresols
TR 542 Cumene
TR 547 Ethinyl estradiol (multigenerational study)
TR 548 Ethinyl estradiol
TR 541 Formamide
TR 551 Isoeugenol
TR 552 Propargyl alcohol
TR 546 Sodium dichromate dihydrate (VI)

Details about this meeting were announced in the *Federal Register* (72FR9546) and are posted on the NTP website: http://ntp.niehs.nih.gov/go/15833 or can be obtained by contacting the Executive Secretary, Dr. Barbara Shane. These meetings are open to the public and public comment, both written and oral, is welcome on any report.

Contact Information: Dr. Barbara Shane, Executive Secretary, NTP Liaison and Scientific Review Office, NIH/NIEHS, P.O. Box 12233, MD A3-01, Research Triangle Park, NC 27709; T: 919- 541-4253; shane@niehs.nih.gov

SACATM Meeting Planned

On June 12, 2007, the Scientific Advisory Committee on Alternative Toxicological Methods (SACATM) will meet at the Bethesda North Marriott and Conference Center, 5701 Marinelli Road, Bethesda, MD. Tentatively on the agenda is a general update on NICEATM/ICCVAM activities, a report from an expert panel's evaluation of five *in vitro* pyrogenicity test methods held in February *(see page 6)*, information about the NTP's High Throughput Screening Initiative, and discussion of the draft NICEATM/ICCVAM 5-year plan *(see page 6)*. This meeting is open to the public with time set aside for public comments on individual agenda topics. Information about the meeting, including the preliminary agenda, registration, and presenting oral public comment's will be announced in the *Federal Register* in the near future and posted on the NTP website: http://ntp.niehs.nih.gov/go/7441 as details are finalized.

Contact Information: Dr. Mary Wolfe, Director, NTP Liaison and Scientific Review Office, NIH/NIEHS, P.O. Box 12233, MD A3-01, Research Triangle Park, NC 27709; T: 919-541-0530; wolfe@niehs.nih.gov

NTP Board of Scientific Counselors to Meet in June

The NTP Board of Scientific Counselors will meet on June 22, 2007, at the NIEHS, 111 T.W. Alexander Drive, Research Triangle Park, NC. The preliminary agenda includes reports on the implementation of recommendations from previous NTP workshops and an NTP retreat relating to the NTP Roadmap, nominations to the testing program, nominations to the Center for the Evaluation of Risks to Human Reproduction, and a presentation on the draft NICEATM/ICCVAM five-year plan. Items for discussion may be added or modified as the agenda is finalized. Details about this meeting will be announced in the *Federal Register* and as available posted on the NTP website: http://ntp.niehs.nih.gov/go/165 or can be obtained by contacting the Executive Secretary, Dr. Barbara Shane. This meeting is open to the public and public comment, both written and oral, is welcome on any agenda topic.

Contact Information: Dr. Barbara Shane, Executive Secretary, NTP Liaison and Scientific Review Office, NIH/NIEHS, P.O. Box 12233, MD A3-01, Research Triangle Park, NC 27709; T: 919-541-4253; shane@niehs.nih.gov

Center for the Evaluation of Risks to Human Reproduction (CERHR)

Hydroxyurea Expert Panel Report Available

CERHR convened a 13-member expert panel on January 24–26, 2007, in Alexandria, VA to evaluate the potential reproductive and/or development hazard for humans associated with exposure to hydroxyurea. Hydroxyurea is used in the treatment of cancer, sickle cell disease, and thalassemia. It is the only treatment for sickle cell disease used in children aside from blood transfusion. The meeting summary can be found on the CERHR website: http://cerhr.niehs.nih.gov select *CERHR Chemicals*). The expert panel reached the following conclusions regarding exposure to hydroxyurea:

- The Expert Panel has concern that hydroxyurea may increase the risk of congenital anomalies or abnormalities of fetal growth and postnatal development after exposure of pregnant women.
- The Expert Panel has minimal concern about the adverse effect of hydroxyurea on growth in children exposed to therapeutic doses of hydroxyurea at 5–15 years of age.
- The Expert Panel has concern about the adverse effect of hydroxyurea on spermatogenesis in men receiving hydroxyurea at therapeutic doses.

The expert panel report is available for public comment on the website and in hardcopy or on CD from CERHR (contact information at the end of article). Written comments on the report can be submitted to CERHR through April 18, 2007.

2nd Bisphenol A Expert Panel Meeting Planned

CERHR convened a 14-member expert panel on March 5-7 at the Radisson Hotel Old Town in Alexandria, VA to assess the potential reproductive and developmental hazards of bisphenol A. The panel discussed the scientific evidence and made revisions to the draft expert panel report on bisphenol A. However, because of the length and complexity

of this evaluation, the panel was unable to complete its task and will reconvene, tentatively scheduled for May 21-23, 2007, to complete the report and issue its conclusions about bisphenol A. Once a location is set, CERHR will announce details about the meeting and post the interim draft expert panel report on its website by April 20: http://cerhr.niehs.nih.gov.

Bisphenol A is a high production volume chemical used primarily in the production of polycarbonate plastics and epoxy resins. Polycarbonate plastics are used in packing for food and drinks and resins are used as lacquers to coat metal products such as food cans, bottle tops, and water supply pipes.

Contact Information: Dr. Michael D. Shelby, Director CERHR, NIH/NIEHS, P.O. Box 12233, MD EC-32, Research Triangle Park, NC 27709, T: (919) 541-3455; FAX: (919) 316-4511 shelby@niehs.nih.gov

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Following the NTP Vision and Roadmap: The NTP Workshops

peptide) will be added routinely when the assays are appropriately standardized and validated. NTP will limit routine collection of samples for biomarker analysis to the rat because the rat can provide more sample volume, whereas routine collection in mice may not be feasible unless additional animals are used. Other recommended biomarkers (e.g., imaging, bronchoalveolar lavage, gene expression, etc.) will be included as adjunct evaluations on a more limited basis. A report from this workshop, which includes NTP's perspective on the recommendations, is in preparation for publication.

NTP Interagency Center for the Evaluation of Alternative Toxicology Methods (NICEATM)

Independent Scientific Peer Review of Five *In Vitro* Pyrogenicity Test Methods

On February 6, 2007, NICEATM convened a 13-member peer review panel at the National Institutes of Health in Bethesda, MD, to review the validation status of 5 *in vitro* pyrogenicity tests. These methods are proposed as replacements for the rabbit pyrogen test (RPT) to assess pharmaceuticals and other products. This meeting was open to the public with an opportunity for public comments. The panel provided comments and recommendations on the usefulness and limitations of these test methods as well as the Interagency Coordinating Committee on the Validation of Alternative Methods (ICCVAM) draft test method recommendations. The panel agreed that the available evidence is insufficient to conclude that these methods are suitable as complete replacements for the RPT. However, they recognized the methods' potential utility for detecting gram-negative endotoxin in parenteral pharmaceuticals on a case-by-case basis, subject to product-specific validation to demonstrate equivalency (i.e., as regulated under 21 CFR 610.9). The panel proposed future studies to characterize the usefulness and limitations of these test methods including their ability to detect non-endotoxin pyrogens. The panel's report will be posted at on the NICEATM/ICCVAM website: http://iccvam.niehs.nih.gov select *Test Method Evaluations*) in the near future.

Development of the NICEATM/ICCVAM Five-Year Plan

Congress has requested that NICEATM and ICCVAM in partnership with the relevant federal agencies develop a five-year plan that addresses (1) research, development, translation, and validation of new and revised non-animal and other alternative assays for integration into federal agency testing programs and (2) identification of areas of high priority for new and revised non-animal and alternative assays for the replacement, reduction, and refinement (less pain and distress) of animal tests. NICEATM/ICCVAM sought public input on the plan (71 FR 66172) and comments received are posted on the NICEATM/ICCVAM website: http://iccvam.niehs.nih.gov/docs/5yearplan.htm .

The Scientific Advisory Committee on Alternative Toxicological Methods (SACATM) met at the NIEHS on November 30 and provided their initial input to the plan (see minutes at http://ntp.niehs.nih.gov/go/8202). Release of a draft 5-year plan for public comment is tentatively scheduled for May and NICEATM/ICCVAM will host a town meeting at the National Institutes of Health in Bethesda, MD on June 11, 2007, 1-5 p.m. to allow the public an opportunity to comment on the draft plan. Additional details about this meeting will be announced in the *Federal Register* and posted on the NICEATM/ICCVAM website in the near future. SACATM will also discuss the draft 5-year plan at its June 12 meeting *(see page 4)*.

Validation Status of the Local Lymph Node Assay for Classifying Sensitizers

Consumer Product Safety Commission (CPSC) has nominated to ICCVAM an evaluation of the validation status of the Local Lymph Node Assay (LLNA) for classifying sensitizers. Specifically, CPSC requests that NICEATM/ICCVAM assess (1) LLNA's validation status as a stand-alone assay for determining potency (including severity) for the purpose of classifying sensitizers; (2) the validation status of non-radioactive LLNA protocols; (3) the validation status of the LLNA limit test; (4) the use of the LLNA to test mixtures, aqueous solutions, and metals; (5) LLNA's applicability to the chemical classes for which it is validated. NICEATM will conduct a review of available data on these tests. As part of that review, NICEATM seeks input on available data and information for LLNA relative to this nomination. Further information is available at http://iccvam.niehs.nih.gov/SuppDocs/submission.htm#nomination.

ICCVAM Elects New Chair

Dr. Marilyn Wind has been elected as the new chair of ICCVAM. She replaces Dr. Leonard Schechtman who retired from the Food and Drug Administration in December 2006. Dr. Wind is Deputy Associate Executive Director in the Directorate for Health Sciences at CPSC. She has been the principal CPSC representative to ICCVAM since 1997 and previously served as vice chair of ICCVAM. Dr. Jodie Kulpa-Eddy, a staff veterinarian with the U.S. Department of Agriculture, is the new vice chair. ●

Contact Information: Dr. William S. Stokes, Director, NICEATM, NIH/NIEHS, P.O. Box 12233, MD EC-32, Research Triangle Park, NC 27709; T: (919) 541-2384; FAX: (919) 541-0947; iccvam@niehs.nih.gov

NTP Staff Publications: October-December 2006

The names of NIEHS/NTP staff are identified in bold. The URL to the article is provided although in some incidences, access may require a subscription to the journal.

Alsarra, I. A., W. G. Brockmann, **M. L. Cunningham** and M.Z. Badr. (2006). "Hepatocellular proliferation in response to agonists of peroxisome proliferator-activated receptor alpha: A role for kupffer cells?" *Journal of Carcinogenesis* 5 (Epub).
http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-33845637290&partnerID=40&rel=R5.6.0

Chen, L. J., E. F. DeRose, and **L. T. Burka** (2006). "Metabolism of furans in vitro: Ipomeanine and 4-ipomeanol." *Chemical Research in Toxicology* **19**(10):1320-1329.
http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-33750218664&partnerID=40&rel=R5.6.0

Elmore, S. A. (2006). "Enhanced histopathology of mucosa-associated lymphoid tissue." *Toxicologic Pathology* **34**(5):687-96.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=17067953

Elmore, S. A. (2006). "Enhanced histopathology of the bone marrow." *Toxicologic Pathology* **34**(5):666-86.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=17067952

Elmore, S. A. (2006). "Enhanced histopathology of the lymph nodes." *Toxicologic Pathology* **34**(5):634-47.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=17067949

Elmore, S. A. (2006). "Enhanced histopathology of the spleen." *Toxicologic Pathology* **34**(5):648-55.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=17067950

Elmore, S. A. (2006). "Enhanced histopathology of the thymus." *Toxicologic Pathology* **34**(5):656-65.
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Elmore, S. A. (2006). "Histopathology of the lymph nodes." *Toxicologic Pathology* **34**(5):425-54.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=17067938

Jefferson, W. N., E. Padilla-Banks and **R. R. Newbold** (2006). "Disruption of the female reproductive system by the phytoestrogen genistein." *Reproductive Toxicology* (Epub).
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=17250991

King-Herbert, A. and K. Thayer (2006). "NTP workshop: animal models for the NTP rodent cancer bioassay: stocks and strains—should we switch?" *Toxicologic Pathology* **34**(6):802-5.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=17162538

Lobenhofer, E. K., **G. A. Boorman**, K. L. Phillips, A. N. Heinloth, **D.E. Malarkey**, P. E. Blackshear, C. Hule and P. Hurban (2006). "Application of visualization tools to the analysis of histopathological data enhances biological insight and interpretation." *Reproductive Toxicology* **34**(7):921-928.
http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-33845781014&partnerID=40&rel=R5.6.0

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NTP Staff Publications: October-December 2006

Luebke, R. W., M. P. Holsapple, G. S. Ladics, M. I. Luster, M. J. Selgrade, R. J. Smialowicz, M. R. Woolhiser and **D. R. Germolec** (2006). "Immunotoxicogenomics: The potential of genomics technology in the immunotoxicity risk assessment process." *Toxicological Sciences* **94**(1):22-27.
http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-33749607380&partnerID=40&rel=R5.6.0

Padilla-Banks, E., W. N. Jefferson, and **R. R. Newbold** (2006). "Neonatal exposure to the phytoestrogen genistein alters mammary gland growth and developmental programming of hormone receptor levels." *Endocrinology* **147**(10):4871-82.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=16857750

Rhodes, M. C., **J. R. Bucher**, J. C. Peckham, G. E. Kissling, M. R. Hejtmancik and **R. S. Chhabra** (2006). "Carcinogenesis studies of benzophenone in rats and mice."
Food and Chemical Toxicology (Epub).
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=17187913

Rozman, K. K., J. Bhatia, A. M. Calafat, C. Chambers, M. Culty, R. A. Etzel, J. A. Flaws, D. K. Hansen, P. B. Hoyer, E. H. Jeffery, J. S. Kesner, S. Marty, J. A. Thomas, D. Umbach and **M. D. Shelby** (2006). "NTP-CERHR expert panel report on the reproductive and developmental toxicity of genistein."
Birth Defects Research Part B - Developmental and Reproductive Toxicology **77**(6): 485-638.
http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-33845900198&partnerID=40&rel=R5.6.0

Travlos, G. S. (2006). "Histopathology of bone marrow." *Toxicologic Pathology* **34**(5): 566-98.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=17067944

Travlos, G. S. (2006). "Normal structure, function, and histology of the bone marrow."
Toxicologic Pathology **34**(5): 548-65.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=17067943

Van den Berg, M., L. S. Birnbaum, M. Denison, M. De Vito, W. Farland, M. Feeley, H. Fiedler, H. Hakansson, A. Hanberg, L. Haws, M. Rose, S. Safe, D. Schrenk, C. Tohyama, A. Tritscher, J. Tuomisto, M. Tysklind, **N. Walker**, R. E. Peterson (2006). "The 2005 World Health Organization reevaluation of human and mammalian toxic equivalency factors for dioxins and dioxin-like compounds." *Toxicological Sciences* **93**(2):223-241.
http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-33748751381&partnerID=40&rel=R5.6.0

Walker, N. J., **M. E. Wyde**, L. J. Fischer, A. Nyska, **J. R. Bucher** (2006). "Comparison of chronic toxicity and carcinogenicity of 2, 3, 7, 8-tetrachlorodibenzo-p-dioxin (TCDD) in 2-year bioassays in female Sprague-Dawley rats." *Molecular Nutrition & Food Research* **50**(10):934-44.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=16977594

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The NTP web site offers electronic files of the Report on Carcinogens and the library of NTP Technical Reports and NTP Toxicity Reports. The PDF files of these reports are available free-of-charge through the NTP web site at http://ntp.niehs.nih.gov (see Resources).

Contact Information: NTP Liaison and Scientific Review Office, NIEHS, P.O. Box 12233, MD A3-01, Research Triangle Park, NC 27709; T: (919) 541-0530; FAX: (919) 541-0295; liaison@starbase.niehs.nih.gov

The NTP Testing Program

Request for Study Nominations

With a broad mandate to provide toxicological characterizations for chemicals and other agents of public health concern, the NTP accepts nominations for new toxicological studies at any time. Labor unions, academic scientists, federal and state agencies, industry, and the general public are welcome to make nominations for specific substances or for general issues related to potential human health hazards of occupational or environmental exposures. As available, a rationale for study should accompany the nomination along with background information describing sources of exposure and possible adverse health effects or concerns associated with exposure, the chemical name and the Chemical Abstract Service (CAS) registry number. Details about the nomination review and selection process are available on the NTP web site: http://ntp.niehs.nih.gov , select *Nominations to the Testing Program* under the heading *Testing Information*) or by contacting the NTP Office of Chemical Nomination and Selection (contact information below).

Current areas of focus in the NTP's testing program include potential hazards associated with nanoscale materials, perfluorinated compounds, herbal dietary supplements, photoactive chemicals, brominated flame retardants, certain complex occupational exposures, dioxin-like compounds, contaminants of finished drinking water, and endocrine-disrupting substances, and methods for assessing potential cardiac toxicity.

All nominations undergo several levels of review before being selected by the NTP for study. These steps of review help to ensure that the NTP's testing program addresses toxicological concerns pertinent to all areas of public health and helps maintain balance among the types of substances and issues evaluated. Studies are initiated on selected nominations as time and resources permit.

A list of study nominations reviewed in previous years, along with supporting documents and public comments, can be accessed through the NTP web site at http://ntp.niehs.nih.gov/go/nom .

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Recent NTP Publications

NTP Technical Reports:

TR 538 Toxicology and Carcinogenesis Studies of Methyl Isobutyl Ketone

Tox 72 Toxicity Studies of Sodium Dichromate Dihydrate

Available at:
http://ntp.niehs.nih.gov/go/reports

CERHR:
NTP-CERHR Expert Panel Report on the Reproductive and Developmental Toxicity of Hydroxyurea

Available at:
http://cerhr.niehs.nih.gov/chemicals/hydroxyurea/hydroxyurea.html